

REMARKS/ARGUMENTS

Claims 1 – 20, of which Claims 1 and 16 are independent, remain in the application. Reconsideration of the application and allowance of all claims are respectfully requested for the following reasons:

Claim Objection

In response to the objection of Claim 1, Applicants have amended Claim 1 to remove the term “be” from line 4.

Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the outstanding objection.

Rejection of Claims 1, 5, 8, 10 and 13-20 Under 35 U.S.C. §102(b)

Claims 1, 5, 8, 10 and 13-20 are rejected under 35 U.S.C. §102(b) as being anticipated by Kim et al. (U.S. 5,552,635).

Applicants respectfully disagree with the opinions of this rejection. As shown in FIG. 6 of Kim, Kim discloses a substrate (71) having a plurality of solder balls (SB), a plurality of external connection leads, a plurality of connection lands and wires between the leads and lands, and a metal cap (79) which is adhered to the upper surface of the substrate (71) by using a seal material (72). Kim further discloses a semiconductor chip (74) mounted on the die pad (73) of the substrate (71), and a bonding pad (not shown) of the chip (74) electrically connected by wiring bonding, to a connection land of the substrate (71). The upper surface of the chip (74) is applied with adhesive (76) on the inner side of the bonding pad only. The adhesive (76) should not affect the surface of the chip (74), and should appropriately support the heat spreader (77). There is mounted a heat

spreader (77) on the adhesive (76). The heat spreader (77) is mounted between the adhesive (76) and the thermal compound (78). The package is then covered with a metal cap (79). The thermal compound (78) could be any thermal elastomers or non electric conductive materials having high thermal conductivity. The non-electric conductive materials may include, but not be limited to, high thermal conductive epoxy polyimides.

It is quite clear that Kim actually fails to disclose the thermal dissipating element of the claimed invention. What Kim teaches are a heat spreader (77) adhered to a chip (74) and a metal cap (79) glued to the heat spreader (77), not a complete thermal dissipating element having a lump including a top face, a bottom face and a side, wherein the lump is fastened inside the cover, and the top face contacts with the bottom surface of the cover. The heat spreader (77) and the metal cap (79) are separately and sequentially adhered on the chip (74) and the substrate (71) respectively. It is therefore that at least two processes are needed to glue the heat spreader (77) and the metal cap (79) on the chip (74) and the substrate (71) respectively, and thereby increases the cost and complexity of the package process. Moreover, the heat spreader (77) and the metal cap (79) are two separate elements instead of a single thermal dissipating element since the heat spreader (77) is not in direct contact with the metal cap (79). Kim actually discloses two separate elements which can be selectively omitted as shown in FIGs. 7 and 8 of Kim and Examiner actually provide a modification or suggestion on the teaching of Kim which can only be found in Applicants' disclosure, not in the prior art. It is therefore that the teaching of Kim is insufficient to render the claimed invention unpatentable.

Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the outstanding rejections and allow the claims pending in the application.

Rejection of Claims 3, 4, 6, 7, 9, 11 and 12 Under 35 U.S.C. §103(a)

Claims 3, 4, 6 and 7 are rejected under 35 U.S.C. §103(a) as being unpatentable over Kim in view of Li (U.S. 5,982,621). Moreover, Claim 9 is rejected under 35 U.S.C. §103(a) as being unpatentable over Kim in view of Kurokawa (U.S. 5,291,064). Furthermore, Claim 11 is rejected under 35 U.S.C. §103(a) as being unpatentable over Kim in view of Admitted prior art. Moreover, Claim 12 is rejected under 35 U.S.C. §103(a) as being unpatentable over Kim in view of Ho (U.S. 6,369,455).

Claims 3, 4, 6 and 7 are dependant claims and whether Li discloses the bottom face is circular or not, the shape of said bottom face is, quadrilateral the top face is fastened on said bottom surface by an adhesive or not, the shape of said top face is circular, the shape of said top face is quadrilateral or not, the teaching of Li dose not disclose the features of the independent claims which Kim fails to teach. Similarly, whether Kurokawa disclose the lump is a silicon chip or not can not render the teaching of Kim sufficient to prove the claimed invention unpatentable. Moreover, neither Admitted prior art nor Ho can render the teaching of Kim sufficient to prove the claimed invention unpatentable.

Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the outstanding rejections and allow the claims pending in the application.

Conclusion

In light of the above remarks to the claims, Applicants contend that claimed invention is patentable over the cited references, and that Claims 1-20 are in condition for favorable reconsideration and allowance. Accordingly, favorable action on Claims 1-20 is respectfully requested.

Respectfully submitted,

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